

PATENT ABSTRACTS OF JAPAN

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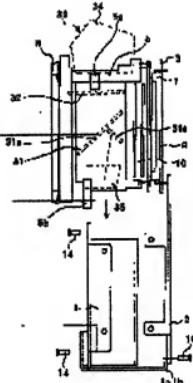
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(54) CAMERA AND IMAGE PICKUP SYSTEM

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a camera capable of easily securing flange back, constituted so that a lens device is hardly influenced by external force even when the external force is exerted on the lens device and further obtaining complete measures against noise.

SOLUTION: In the camera, in which a lens holding means 6 for attachably/ detachably holding a lens device and an image pickup means 7 for picking up an image formed by the lens device are attached to a camera main body, the camera main body is composed of a front main body member 1 constituting the front side part of the camera main body, a rear main body member 2 constituting the rear side part of the camera main body and coupled with the main body member, and a principal main body member 5 to which the lens holding means and the image pickup means are attached and which is coupled with at least either one of the front main body member or the rear main body member.



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CLAIMS

[Claim(s)]

[Claim 1] In the camera with which a lens maintenance means to hold lens equipment removable on the body of a camera, and an image pick-up means to picturize the image formed by said lens equipment were attached The body member before said body of a camera forms a part for the flank before this body of a camera, After forming a part for an after [said body of a camera] flank and being combined with said before body member, a body member, The camera characterized by consisting of main body members which said lens maintenance means and an image pick-up means are attached, and are combined at least with one side among said before body member and said after body member.

[Claim 2] Said main body member is a camera according to claim 1 characterized by being fixed only to said before body member among said before body member and said after body member.

[Claim 3] The camera according to claim 1 or 2 characterized by having the connection member which connects said before body member and said after body member.

[Claim 4] The camera according to claim 3 characterized by arranging said connection member at the both sides said whose main body members were pinched, respectively.

[Claim 5] A camera given in either of claims 1-4 characterized by attaching the mirror unit which reflects finder optical system and the flux of light from said lens equipment in said main body member, and is led to it at said finder optical system.

[Claim 6] Said finder optical system is a camera according to claim 5 characterized by including the focus plate used as the image formation side of the flux of light reflected by said mirror unit.

[Claim 7] A camera given in either of claims 1-6 characterized by attaching a focal detection means to use the flux of light from said mirror unit for said main body member, and to perform focal detection.

[Claim 8] A camera given in either of claims 1-7 characterized by said before body member and said after body members being metal components.

[Claim 9] The camera according to claim 8 characterized by said before body member and said after body members being the metal components fabricated by press working of sheet metal.

[Claim 10] The camera according to claim 8 or 9 characterized for having arranged electric mounting components and having made it flow through said before body member and said after body member with an electric gland between said before body member and said after body member by things.

[Claim 11] A camera given in either of claims 1-10 characterized by supporting the sheathing member to which an accessory applied part with the removable accessory of a strobe lighting system and others is fixed by the metal reinforcement member in which it was attached by at least one side among said before body member and said after body member.

[Claim 12] The image pick-up system constituted by the camera of a publication, and this camera by having lens equipment with which it is equipped removable at either of claims 1-11.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to a single lens reflex camera type digital camera.

[0002]

[Description of the Prior Art] The body of the conventional single-lens reflex camera as proposed in JP,62-113341,U The main body member which consists of the connection section which connects the cartridge chamber portion which contains a film cartridge, the spool chamber portion in which the spool which performs film winding up was held, these cartridge chamber portion, and a spool chamber portion, and constitutes a film rail side, The mirror box in which the connection member for compensating the lack of on the strength by the side of the lens mount of this main body member and the mounting member by which a front end side is equipped with lens equipment removable were attached is combined, and it is constituted.

[0003] The above-mentioned mounting member and the Miller machine style which reflects the flux of light from a lens and is led to finder optical system when it can move to a photography optical path and has been arranged in a photography optical path are attached in the mirror box.

[0004]

[Problem(s) to be Solved by the Invention] Thus, when the body of a camera has composition divided into the main body member which has the rail level which determines the location of a film plane, and the mirror box holding a mounting member, even if it combines these main bodies member and a mirror box, it is difficult [it] to set up the flange back who is the distance from a lens mount side to a film plane with a sufficient precision.

[0005] for this reason -- for example, an activity special to flange back adjustment is needed, and it has also become the factor of a cost rise as cutting of the rail level of the main body member is carried out and the flange back's precision is taken out, after combining the main body member and a mirror box. Moreover, when combining the main body member and a mirror box since cutting of the above-mentioned rail level cannot be performed if the main body member is fabricated by the mold member, a washer etc. must be put between both bond parts, it is necessary to carry out flange back adjustment, and a time-consuming activity further must be done.

[0006] And even if it does in this way and performs flange back adjustment, when a load is applied at the tip of a taking lens and the physical relationship of a mirror box and the main body member shifts, the flange back will change simply.

[0007] On the other hand, the noise to generate has also increased by carrying CPU of a quick clock in a digital camera etc. However, since the conventional body of a camera is formed with plastic material in many cases, it is difficult for it to stop this effectively.

[0008] For this reason, although it is possible to form the body of a camera with a metal, since the configuration of the body of a camera is complicated, while having to form by aluminum dies casting, or having to fabricate with a Magnesium alloy and the body of a camera becoming what has very high cost, on structure, it does not result in a wrap with a metal and the whole camera cannot be referred to as

enough as a cure against a noise.

[0009] Then, this invention can secure the flange back easily, and even if external force joins lens equipment, it is hardly influenced [the], but it aims at offering the camera with which still more sufficient cure against a noise is acquired.

[0010]

[Means for Solving the Problem] In the camera with which a lens maintenance means to hold lens equipment removable on the body of a camera in this invention, and an image pick-up means to picturize the image formed by lens equipment were attached in order to attain the above-mentioned purpose. The body member before forming a part for the flank before this body of a camera for the above-mentioned body of a camera, After forming a part for an after [the body of a camera] flank and being combined with a last body member, it constitutes from a body member and a main body member which the above-mentioned lens maintenance means and an image pick-up means are attached, and is combined at least with one side among a last body member and a back body member.

[0011] Since both lens maintenance means and image pick-up means of deciding the flange back are attached in the main body member even if force which external force joins by this the lens equipment with which the lens maintenance means was equipped, and is made to transform this into the body of a camera acts, the flange back cannot change easily.

[0012] In addition, as the main body member is fixed only to the before body member near lens equipment among a last body member and a back body member, it may be made to lessen effect on the body of a camera by the external force which joined lens equipment more.

[0013] Moreover, you may make it raise the reinforcement of the whole body of a camera by preparing the connection member which connects a last body member and an after body member.

[0014] To the main body member, furthermore, finder optical system (a focus plate is included), By attaching the mirror unit which reflects the flux of light from lens equipment, and is led to finder optical system, or attaching a focal detection means to perform focal detection using the flux of light from a mirror unit further It becomes possible to prevent that the distance between the two above-mentioned person or 3 persons changes with the external force which joined lens equipment.

[0015] Moreover, by constituting a last body member and a back body member from metal components, and making an electric gland flow through these bodies member, when electric mounting components have been arranged between these bodies members, it is possible to reduce the noise which occurs from this electric mounting component and begins to leak to the camera exterior.

[0016] Moreover, as the sheathing member to which the accessory applied part equipped with the accessory of a strobe lighting system and others removable is fixed is supported by the metal reinforcement member in which it was attached by at least one side among the last body member and the back body member, it becomes possible to raise the reinforcement of the accessory applied part circumference, and the effectiveness of noise reduction is also acquired.

[0017]

[Embodiment of the Invention] The configuration of the single lens reflex camera digital camera which is the operation gestalt of this invention is shown in drawing 1 - drawing 4 . In these drawings, 1 is the front chassis (last body member) made by carrying out press forming of the metal plate, and is a member which constitutes a part for the flank before the body of a camera.

[0018] Moreover, 2 is the back chassis (back body member) made by carrying out press forming of the metal plate, and is a member which constitutes a part for an after [the body of a camera] flank. What is necessary is to be able to consider aluminum, iron, stainless steel, etc. about these before chassis 1 and the back chassis 2 as a metal to be used, to use 0.8mm - about 2mm as board thickness, and just to choose the optimal board thickness from the relation between the quality of the material and reinforcement.

[0019] In addition, cost can consider as chassis components with reinforcement it is cheap and strong by using the front chassis 1 and the back chassis 2 as a pressing. In addition, the front chassis 1 and the back chassis 2 may be manufactured by dies casting, CHIKUSO molding, etc.

[0020] Furthermore, as for the front chassis 1 and the back chassis 2, the flow is taken to the electric

gland.

[0021] 3 and 4 are connection chassis (connection member) which connect the right-and-left parts of the front chassis 1 and the back chassis 2 mutually. These connection chassis 3 and 4 are attached in the front chassis 1 and the back chassis 2 on screws 15, 16, 17, and 18. If its cost is cheap when these connection chassis 3 and 4 are fabricated with plastic material, and it fabricates with a metallic material, reinforcement and the noise-proof engine performance will serve as high components.

[0022] In addition, the bottom surface parts 1a and 1b which extend back are formed in the lower limit section of the front chassis 1, and, as for the front chassis 1 and the back chassis 2 which were unified through the connection chassis 3 and 4, the bottom surface parts 1a and 1b and lower limit section 2a of the back chassis 2 are further connected on the direct screw 19 (refer to drawing 3).

[0023] 5 is a central chassis (the main body member) arranged among both the connection chassis 3 and 4 between the front chassis 1 and the back chassis 2 (location close to the connection chassis 3 and 4). Lens mount (lens maintenance means) 6, the mirror unit 31 mentioned later, the finder optical system (the focus plate 32 is included) 33, the image sensor 7, the shutter unit 10, and the focal detection unit 35 are attached in this central chassis 5. Moreover, this central chassis 5 is fixed to the front chassis 1 on a screw 14 in the bis-stop sections 5a and 5b.

[0024] Lens mount 6 is being attached and fixed to the front end of the central chassis 5, and the front face (mounting side) of this lens mount 6 is equipped with the lens equipment which is not illustrated removable according to a bayonet device etc. By equipping this lens mount 6 with lens equipment, a single lens reflex camera type image pick-up system is constituted.

[0025] The image sensor 7 is constituted by CCD etc. and carries out photo electric conversion of the photographic subject light which received light through the lens equipment with which lens mount 6 was equipped.

[0026] 8 is the image sensor attachment component which carried out fixed maintenance of the image sensor 7 by adhesion etc., and was bis-fixed to the back end of the central chassis 5.

[0027] Lead 7a for transmitting the electric output of an image sensor 7 is the substrate by which soldering connection was made, and 9 transmits the output of an image sensor 7 to the Maine circuit board which is not illustrated.

[0028] 10 is a focal plane shutter which restricts the quantity of light which carries out incidence to an image sensor 7 from the lens equipment with which lens mount 6 was equipped, and is being fixed to the before [the image sensor 7 in the posterior part of the central chassis 5] side.

[0029] Among drawing 4 , 11 are a metaled reinforcement member, cover the upper part of the finder optical system 33, and the tooth back of the finder eye contacting part 13, and carry out fixed maintenance of the up sheathing member 21 to which the accessory shoe 12 for attaching an external stroboscope removable was fixed. This reinforcement member 11 is fixed to the back chassis 2 with the up sheathing member 21. Thus, with constituting, a accessory shoe 12 and the finder eye contacting part 13 will be connected with the back chassis 2 through the reinforcement member 11, and the reinforcement of these accessory shoes 12 and the finder eye contacting part 13 circumference increases. Moreover, since grounding of the reinforcement member 11 is carried out through the back chassis 2, it can acquire the noise leakage reduction effectiveness from the camera upper part.

[0030] In addition, the finder eye contacting part 13 can hold the accessories (eyepiece etc.) of a finder system removable while holding the ocular which is one of the components of the finder optical system 33.

[0031] The mirror unit 31 consists of drives (not shown) which are arranged behind Maine mirror 31a which can move (down rise), and this Maine mirror 31a to the location by the side of before the shutter unit 10 in a photography optical path, and drive submirror 31b in which expansion and folding are possible, and these Maine mirror 31a and submirror 34a to Maine mirror 31a.

[0032] Maine mirror 31a is in the condition (mirror down) arranged in a photography optical path, and turns and reflects in the finder optical system 33 the photographic subject flux of light from the lens equipment with which lens mount 6 was equipped. The half mirror which penetrates a part of flux of light from lens equipment is used for this Maine mirror 31a, and this transmitted flux of light is reflected

towards the focal detection unit 35 by submirror 31b developed to Maine mirror 31a.

[0033] In addition, after Maine mirror 31a has shunted out of a photography optical path (mirror rise), the photographic subject flux of light from lens equipment goes to a shutter unit 10 and image sensor 7 side as it is. Moreover, submirror 31b is folded up to Maine mirror 31a at this time.

[0034] The photographic subject flux of light which 32 is a focus plate which is one of the components of the finder optical system 33, and was reflected by the mirror unit 31 connects a focus on this focus plate 32. Thereby, finder observation of the photographic subject by the photography person is attained.

[0035] 34 is a pentaprism which is one of the components of the finder optical system 33, and leads the photographic subject image which carried out image formation to the focus plate 32 to the finder eye contacting part 13.

[0036] 40 is electric mounting components and is arranged between the connection chassis 3 and the central chassis 5 (fixed maintenance is carried out at the connection chassis 3). In addition, although there are electric mounting components besides this, these are all arranged in the clearance formed among each chassis 1-3.

[0037] By the body of a camera constituted as mentioned above, in the state of the assembly completion shown in drawing 2, while the front chassis 1 and the back chassis 2 are firmly bis-combined through the connection chassis 3 and 4 by right and left of the central chassis 5, each of lower limit sections (pars-basilaris-ossis-occipitalis 1a and lower limit section 2a) are bis-combined firmly. That is, the front chassis 1, the back chassis 2, and the connection chassis 3 and 4 are unified in the shape of [firm] a cube type in the form which encloses the central chassis 5. And the central chassis 5 is also firmly bis-combined with the front chassis 1 of the chassis structures unified in the shape of a cube type. For this reason, the chassis structure where reinforcement is as a whole very high is realizable.

[0038] And since the front chassis 1, the back chassis 2, and the reinforcement member 11 were made with the metal and all of these metal member have flowed with the electric gland, it can intercept effectively that the noise generated from the electric mounting components in a chassis (40th grade) begins to leak to the camera exterior.

[0039] In addition, if the connection chassis 3 and 4 are made from a metal member, reinforcement and the noise reduction effectiveness will increase more.

[0040] Moreover, since both the lens mount 6 and image sensors 7 that determine the flange back are attached in the central chassis 5, even when the lens equipment with which lens mount 6 was equipped receives external force and this force gets across to the body side of a camera, the flange back cannot change easily. That is, it is hard to be influenced by the static pressure from the outside to the flange back.

[0041] Moreover, since the central chassis 5 is combined with the front chassis 1 near lens equipment, compared with the case where it is combined with the back chassis 2, the central chassis 5 cannot be easily influenced of the force from lens equipment.

[0042] And the finder optical system 33 and the focal detection unit 35 containing the mirror unit 31 besides lens mount 6 and an image sensor 7 and the focus plate 32 are being altogether fixed to the central chassis 5, and, in addition to the above-mentioned flange back, the distance from the lens mount 6 to the focus plate 32 of the finder optical system 33 and the distance from the lens mount 6 to the focal detection unit 35 are also determined by relation with the central chassis 5. For this reason, even when the lens equipment with which lens mount 6 was equipped receives external force and this force gets across to the body side of a camera, the relation of the three above-mentioned distance is hardly influenced, and collapse does not produce it in the relation of the three above-mentioned distance.

[0043] The body of a camera very strong against a static pressure hardly influenced by the static pressure from the outside is realizable with the above.

[0044] In addition, although the above-mentioned operation gestalt explained the case where the central chassis 5 was combined only with the front chassis 1, it may be made to combine only with the back chassis 2, or you may make it combine before and the both sides of the back chassis 1 and 2.

[0045] Moreover, although the above-mentioned operation gestalt explained the case where the reinforcement member 11 was attached in the back chassis 2, a reinforcement member may be attached

in the front chassis 1, and a reinforcement member may be attached so that both the chassis 1 and 2 may be straddled.

[0046]

[Effect of the Invention] Since both lens maintenance means and image pick-up means of deciding the flange back are attached in the main body member according to this invention even if force which external force joins the lens equipment with which the lens maintenance means was equipped, and is made to transform this into the body of a camera acts as explained above, it can prevent that the flange back changes.

[0047] In addition, if the main body member is fixed only to the before body member near lens equipment among a last body member and a back body member, effect on the body of a camera by the external force which joined lens equipment can be lessened more.

[0048] Moreover, the reinforcement of the whole body of a camera can be raised by preparing the connection member which connects a last body member and an after body member.

[0049] Furthermore, if the mirror unit which reflects finder optical system (a focus plate is included) and the flux of light from lens equipment in the main body member, and is led to it at finder optical system is attached or a focal detection means to perform focal detection using the flux of light from a mirror unit further is attached, it can prevent that the distance between the two above-mentioned person or 3 persons changes with the external force which joined lens equipment.

[0050] Moreover, if a last body member and a back body member are constituted from metal components and it is made to make an electric gland flow through these bodies member, when electric mounting components have been arranged between these bodies members, the noise which occurs from this electric mounting component and begins to leak to the camera exterior can be reduced.

[0051] Moreover, a metal reinforcement member is attached in a last body member or a back body member, and if the sheathing member to which an accessory applied part with the removable accessory of a strobe lighting system and others is fixed by this reinforcement member is supported, while being able to raise the surrounding reinforcement of an accessory applied part, the effectiveness of noise reduction can also be acquired.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] The flat-surface exploded view showing the structure of the body of a camera of the single-lens reflex camera which is the operation gestalt of this invention.

[Drawing 2] The top view showing the assembly completion condition of the above-mentioned body of a camera.

[Drawing 3] The side-face exploded view showing the structure of the above-mentioned body of a camera.

[Drawing 4] The exploded view of the upper part of the above-mentioned body of a camera.

[Description of Notations]

- 1 Front Chassis
- 2 Back Chassis
- 3 Four Connection chassis
- 5 Central Chassis
- 6 Lens Mount
- 7 Image Sensor
- 8 Image Sensor Attachment Component
- 9 Substrate
- 10 Focal Plane Shutter
- 11 Metaled Reinforcement Member
- 12 Accessory Shoe
- 13 Finder Eye Contacting Part
- 15-19 Screw
- 21 Up Sheathing Member
- 31 Mirror Unit
- 32 Focus Plate
- 33 Finder Optical System
- 34 Pentaprism
- 35 Focal Detection Unit

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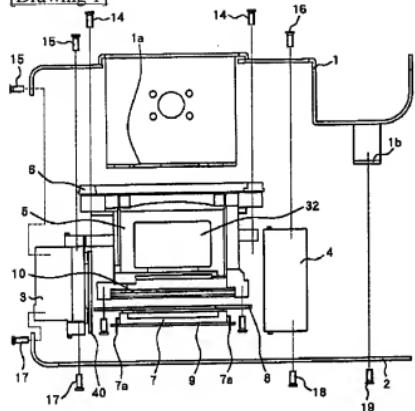
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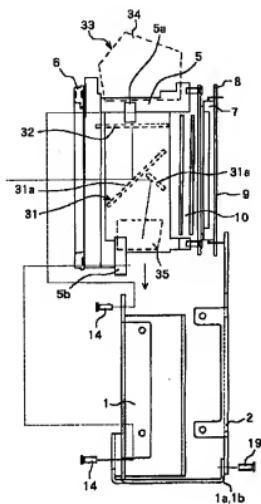
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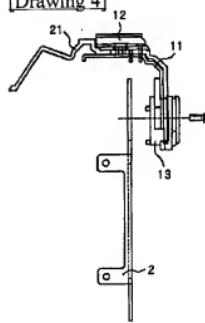
DRAWINGS

[Drawing 1]





[Drawing 4]



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